

motralec

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THREE SCREW PUMPS
FOR
POWER & INDUSTRY

RELIABLE PUMPING PARTNERS SINCE 1960

INTRODUCTION

"TUSHACO" - a leading name in the field of Positive Displacement Rotary pumps since 1968 introduced for the first time in India the concept of "Three Screw Pumps" already in 1970's. Foreseeing the growing demand for totally reliable fuel and lube oil pumps for Thermal and Hydel Power Plants, Fertilizer, Chemical and Steel Projects a beginning was made by importing critical components and building pumps locally.

Over decades, thousands of three screw pumps have been manufactured and delivered. Valuable experience gained and modern manufacturing and testing facilities established under joint collaboration from world renowned German company. Today TUSHACO is undisputed leader not only in Three Screw pump Technology but equally in the other types - namely Twin Screw, Single Screw/Progressive Cavity - as well as the conventional types like Shuttle Block, Internal Gear, External Gear, Trochoidal and Vane types. This unique position, combined with years of Application Engineering expertise and knowledge of Process Engineering requirements offers direct benefit to customers by the right choice of the pump design selection for almost any given duty parameters.

TUSHACO pumps are on OEM list of practically all major plant and equipment manufacturers, consulting organizations and has met with approvals from third party inspection agencies - national and international. Reliable performance of thousands of TUSHACO Three Screw pumps in India and overseas - over decades is the silent testimonial of the hard and dedicated efforts behind this success.

WORKING PRINCIPLES

TUSHACO Three Screw pumps employ just three screw elements - one Power screw and two idler screws running in the three precision bores in the housing or liner. The screws are so profiled that they form a liquid tight seal between the thread. As the screws rotate, Pockets/cavities are formed where liquid gets trapped and conveyed from one end of the screws to the other end - similar to the action of a piston pump with infinite stroke. This results in smooth, pulsation free flow with extremely low noise and vibration levels almost impossible to be achieved by any other design of Positive displacement or other types.

The power rotor does not drive the idlers as commonly believed. The hydraulic forces acting on screw flanks turn the idlers torquelessly thus reducing the friction. The idlers simply roll over the root diameter of main screw and float freely in casing/liner bores. Large surface areas on idlers dia. reduce the unit pressure, centralize the power rotor and absorb the radial loads. A balance piston integrally machined on power rotor takes care of axial thrusts.

While in operation, the screws are in hydrodynamic balance on film lubrication and do not require any additional bearings. The one ball bearing often used is only for axial positioning of rotor and safer operation of mechanical seals. Small rotor dimensions enable the pump to be operated at high speeds directly coupled 3000 or 3600 RPM motors or other prime movers. Such unique design and features has demonstrated excellent reliability with pumps in operation continuously non-stop for decades together without replacement of any components or maintenance on clean fluids.

SALIENT FEATURES

- High reliability
- Long Service Life
- Negligible Maintenance
- High efficiency
- Self Priming
- Smooth Pulsation free flow
- Low noise and vibrations
- High speed capability
- Insensitive to viscosities
- High pressure capability
- Axial flow - No churning, chewing or shearing
- Excellent suction capability
- Hydraulic balancing of forces eliminates need for any bearings.

TYPICAL APPLICATIONS

Fuel Oil Service

Fuel oil burner service for Thermal Power Plant / industrial Package Boilers, furnaces, Kilns and combustion systems.

Fuel transfer and booster service for Captive diesel /Gas Turbines Plants, and Industrial Combustion Systems, Fuel oil circulations and Centrifuge feeding. Tank farm tank to tank transfers.

Hydraulic Duties

Hydraulic Governing Service for water turbines, inlet Penstock valves.

Low and medium pressure hydraulic applications, High pressure jacking oil service for Rotor lifting for Turbines/Compressors/Alternators.

Lubricating Duty

Pressure Lubrication and cooling of bearings for Turbo machinery, Gear Boxes, Bearing Lubrication of Coal Mills, ID/FD Fans, Diesel Engines, Steel Rolling Mills, Air pre-heater guide bearings, Compressors.

Seal oil Service

Hydrogen cooled Generators, Gas and Refrigeration Compressors.

PERFORMANCE RANGE

TYPES	CAPACITY LPM	PRESSURE Kg/Cm ²	VISCOSITY RANGE cSt	TEMP ^o C
T 3S FP	10~100	40	3~750	180
T 3S L	20~500	16	3~750	180
T 3S N	20~2500	64	3~1500+	180*
T 3S M	20~2000	120	3~1000+	180*
T 3S H	20~1000	250	3~1500	180

Figures given are indicative for range only considering speeds upto 2900 RPM.

Three screw pumps can run to speeds upto 10000 RPM under special conditions.

+ Higher viscosities can be handled upto 50,000 cSt or more.

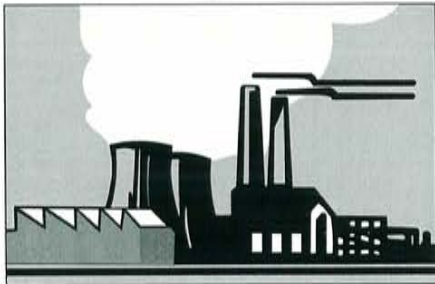
* Higher temperature upto 250°C can be handled with special execution.

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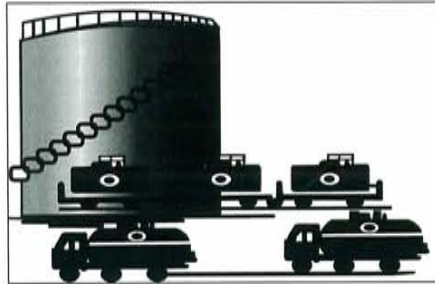
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TUSHACO[®]
PUMPS

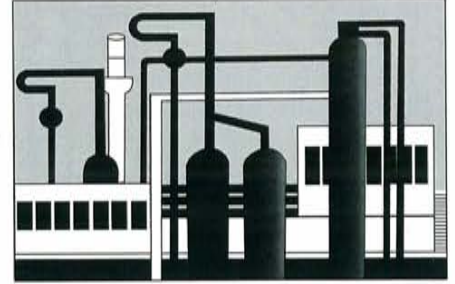
The main fields of application



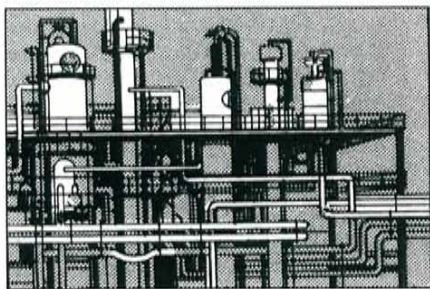
Power Plants



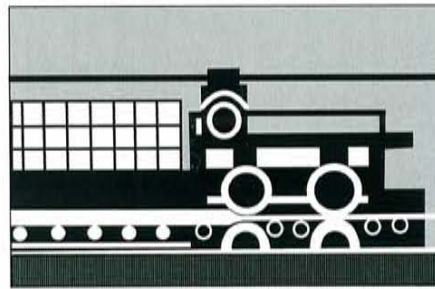
Oil Storage Installations



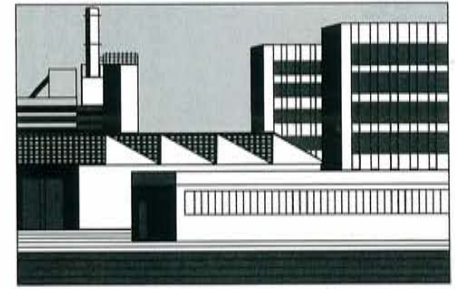
Petrochemical Industry



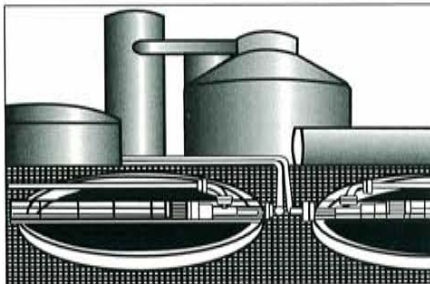
Refinery



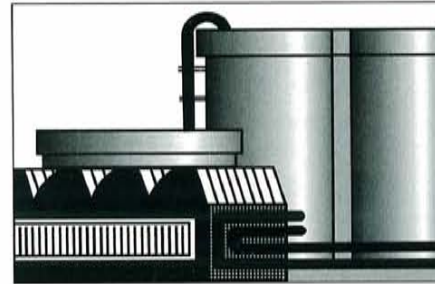
*Heavy Machinery Engineering
e.g. Steel Rolling Mills*



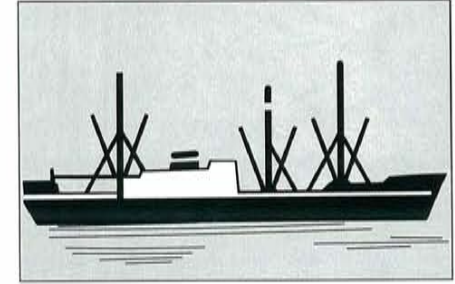
*General Industrial Technics
Machine Tool Engineering, Hydraulics*



Sewage and Water Treatment



Food Industry



Ship Building

Other TUSHACO Designs of Rotary Pumps:

External Gear, Internal lobe (Trichoidal), Shuttle Block, Vane, Three screw, Twin screw, progressive cavity.

Performance proven positive pumping power!

TUSHACO PUMPS PVT. LTD.

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